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EFFECT OF TRIMESTER SCHOOL OPERATION ON THE ACHIEVEMENT AND ADJUSTMENT OF KINDERGARTEN AND FIRST THROUGH THIRD GRADE CHILDREN. FINAL REPORT.

BY- WITHERSPOON, RALPH L.
FLORIDA ST. UNIV., TALLAHASSEE, INST. OF HUMAN DEV

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AT THE FLORIDA STATE UNIVERSITY SCHOOL, A LONGITUDINAL STUDY ATTEMPTED TO FIND OUT IF KINDERGARTEN THROUGH THIRD GRADE CHILDREN WHO ATTENDED THE EXTENDED SCHOOL YEAR OF THE TRIMESTER SYSTEM SHOWED SIGNIFICANT DIFFERENCES IN ACHIEVEMENT AND ADJUSTMENT AS COMPARED WITH CHILDREN OF A SIMILAR MEAN IQ WHO ATTENDED ONLY DURING THE REGULAR SCHOOL YEAR. THE URBAN AREA SUBJECTS HAD THESE ATTENDANCE PATTERNS, (1) 38 CHILDREN ATTENDED FOR THREE SUMMERS, (2) 38 FOR NO SUMMERS, (3) 44 FOR ONE SUMMER, AND (4) 43 FOR TWO SUMMERS. FIRST, SECOND, AND THIRD GRADE ACHIEVEMENT WAS DETERMINED BY THE METROPOLITAN ACHIEVEMENT TEST AND THE DEVELOPMENTAL READING TEST. ADJUSTMENT WAS EVALUATED BY THE HAGGERTY-OLSON-WICKMAN BEHAVIOR RATING SCHEDULES, WHICH USED TEACHERS' RATINGS, AND THE CALIFORNIA TEST OF PERSONALITY. ALL TESTS WERE GIVEN EACH OCTOBER AND MAY FOR A THREE-YEAR PERIOD. THE SCIENCE RESEARCH ASSOCIATES MENTAL ABILITIES TEST WAS GIVEN TO ALL SUBJECTS BEFORE MID-OCTOBER OF THE FIRST YEAR. ANALYSIS OF VARIANCE OF THE DATA PERMITTED RESULTS TO BE ADJUSTED IN TERMS OF VARIATION DUE TO INTELLIGENCE. ALTHOUGH THE EVIDENCE IS INCONCLUSIVE, FINDINGS INDICATE THAT EXTENDING THE LENGTH OF THE SCHOOL YEAR HAS A NEGATIVE EFFECT ON CHILDREN'S ACHIEVEMENT AND ADJUSTMENT. FURTHER TREND ANALYSES OF THE DATA COLLECTED WILL DETERMINE THE MOST CRITICAL AGE LEVELS IN RELATION TO SCHOOL YEAR LENGTH. A STUDY WILL ALSO BE MADE TO FIND OUT WHY CHILDREN DO OR DO NOT ATTEND SUMMER SCHOOL. AN EXTENSIVE BIBLIOGRAPHY IS INCLUDED IN THIS REPORT. (MS)

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Ralph L. Witherspoon

The Florida State University
Tallahassee, Florida

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U.S. DEPARTMENT OF
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Any effort to determine the best conditions leading to quality education is of great significance in the United States today. One such effort often proposed and repeatedly tried, is the extension of the school year beyond the traditional nine or ten months. Appreciation is expressed to the Administration of the Florida State University School for providing an opportunity to assess the effectiveness of such a plan, namely, trimester, or year-round school operation.

Especial recognition is given to the teachers of the children in the experiment. Their consistent efforts to carry out the conditions of the research effort during the three-year period involved, and their patience and assistance during the extensive testing sessions has assured a high quality research effort. They are Miss Lucy Harrison and Mrs. Julia Fussell, kindergarten teachers; Miss Nina Gantt and Mrs. Ellen LLoyd, first grade teachers; Miss Minnie Lamberth and Mrs. Nelda Alderman, teachers of the second grades; Miss Harriette McCarter, Mrs. Suzanne Davis and Mrs. Charlene Wilson, third grade teachers; Mrs. Harriet Reeves, Mrs. Mallie Slater and Miss Anne Black, fourth grade teachers; Mrs. Florine Way, Mrs. Virginia Ritter and Miss Mary Neal James, teachers of the fifth grades; Mrs. Jewel Frary and Mrs. Betty Bush, sixth grade teachers.

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SUMMARY

Because the Florida State University School began trimester operation in the fall of 1964, a laboratory was available to study the effect of various lengths of school attendance per year on the achievement and mental health of young school children.

Objectives

Two specific null hypotheses were investigated:

1. There is no significant difference in achievement between comparable groups of K-3 children who attend school during the regular and the greatly extended school year of three trimesters.

2. There is no significant difference in adjustment status between comparable groups of K-3 children who attend school during the regular and the greatly extended school year of three trimesters.

Procedure

At the close of the study, 38 children had attended all three summers and 38 had attended no summers. Forty-four had attended one summer and 43 had attended two summers. Because the University School did not provide admission priority to any certain groups, children attending represented a cross section of a population typical of a small urban area in the United States.

First, second, and third grade achievement was determined by use of the Metropolitan Achievement Test and the Developmental Reading Test. Adjustment was evaluated by use of the Haggerty-Olson-Wickman Behavior Rating Schedules and the California Test of Personality. All tests were administered each October and May for a three-year period. Pervious to the last two weeks in October of the first year, the Primary Mental Abilities test was administered to all subjects. This was done in order that, by means of an analysis of covariance technique, the results

could be adjusted in terms of variation due to intelligence.

An analysis of covariance technique was used to investigate the null hypotheses. Trend analyses were made to determine the effects of various lengths of time of school attendance.

Findings

The evidence would indicate that length of school year does effect the achievement and adjustment of young children, kindergarten through third grade necessitating the partial rejection of both null hypotheses. When intelligence is held constant children of these ages tend to achieve less well, and possess more adjustment problems as perceived by their teachers, when they attend an extended school year each year for three years than comparable children who attend only the regular school year during the same period of time.

Further trend analyses of existing data are needed to further pin point the most critical age levels in relation to length of school year. Determination of reasons why children do or do not attend summer school with appropriate effect analyses are also needed. This investigator intends to continue these investigations and report additional findings later.

INTRODUCTION AND REVIEW OF LITERATURE

The possible values of children attending school for a longer period of time each year than the traditional school year of nine or ten months is not new in American Education. As early as the 1920's, efforts were being made to find ways to extend the school year and to evaluate the effect of such change (Swan, 58; School Review, 3; Clarke, 18; Clogston, 19; Elementary Science Journal, 60). Since that time there have been repeated and scattered attempts to improve the efficiency of the school program by having children attend school for a longer period of time during the school year.

Summary analyses of attempts to extend the school year and bibliographic information have been provided by The Review of Educational Research (2), Fitzpatrick (26), Hull and Wright (34), and Moon (42). Pros and cons of actual operating extended school programs have been discussed by Fitzpatrick (27), U. S. News and World Report (69), NEA Research Bulletin 42 (56), Taylor (59), and McCarty (38). It would appear from these reports that there are more cons than pros.

Pertinent to the research reported herein is a study by Robinson (47) showing that volunteer attenders tend to be more sensitive to seeking solutions to their problems. Williams (66) reported successful programs above the third grade. Most of the objections to year round operation came from parents, teachers and school administrators (McPherson, 39; Rich, 46; Time Magazine, 1; Tomancik, 62; and Imhoff, 35). Interference with vacation plans, general parent opposition, high cost, difficulty of building maintenance, need for air conditioning, administrative difficulties, and mental fatigue of both pupils and teachers were the most common reasons given for opposition to year round school operation. The Los Angeles Committee (39) concluded that the merits of all-year school "were not worth the struggle to get the public to break with tradition."

Clogston (19) and Vanderslice (64) found no detrimental effects of year round operation on school achieve-

ment. Brinkerhoff (10, 11, 12) and Friggens (28) reported significant gains in pupil achievement due to full-year operation. More economical operation was credited to all-year schooling by Roe (50). Other advantages of the extended school year were an opportunity to make up failures and pursue additional fields of interest (Deacon, 22); better adjustment to first grade (Brown, 13); correlation between attendance and achievement (Crawford, 20); no unfavorable affects on health, or on social or emotional development (Clarke, 18; Klausmeier, 37); and "breaking of grade barriers" (Bendicksen, 5).

Much has been written about the desirability of children attending school longer (Best, 7; Martin and Caughey, 40; Grieder, 29; School Review, 3; Phillips, 44; ASSA, 68; Sarner, 52; Rothwell, 48; and Roe, 49). Turberville (63) argued for a twelve month school year in order to curb juvenile delinquency and to give the economy a healthy stimulus. Specific year round operations were described by Thomas, 61; Hartsell, 32; Deacon, 22; Sternig, 54; Hicks, 33; and American School and University, 14. Enrichment, remedial work, advanced academic achievement, maintaining skills normally lost during the summer, and acceleration are possible gains advocated (Peterson, 45; Miles, 41; Better Schools, 55; Clark, 17; Carper, 16; and Hannah, 30).

Many arguments have been advanced for year round schools as a means of saving money or as a means of achieving more efficient utilization of space (Faunce, 25; Wagner, 65; National Parent Teacher, 51; Berman, 6; Wyman, 67; Boutwell, 9; and School Management, 4).

Experimentation and gradual implementation were advocated by Derthick (23) and Dickens and Ballantyne (24). Pressures and opposition on the part of pupils, teachers, and parents are given as reasons for opposing year round schools (Irvin, 36; Cardozier, 15; and Davis, 21). Opinions opposing year round school attendance have been expressed by parents, supervisors, and administrators (Swan, 58; Catholic School Journal, 57; Hansen, 31; Ogden, 43; and Shaffer, 53). Bienstok (8) explored the motivational bases for resistance to change and urged respect of the values, interests, and expectations of those concerned.

The above literature revealed little research attesting to the effectiveness of a longer school year. It is recognized that informal experimentation along these lines has taken place for more than half a century but the results have been reported only in a general way. It is clear from the available evidence that more precise data are needed in this area.

Because of the urgency of meeting today's educational needs, no one doubts the wisdom of attempting educational programs which give promise of improving the educational process and of increasing the efficiency of learning. The present relatively short school year and short school day grew out of the needs of a basically rural society and little thought has been given to lengthening the educational year to better meet the demands of a rapidly changing, technological, urban society. However, certain questions remain unanswered. For example: What portion of each year provides for maximum achievement? Is there a point beyond which additional learning does not occur? From the standpoint of adjustment, will being in school longer improve personal and social skills, thus resulting in better adjustment, or will the reverse be true? Does the age of the children involved make a difference? It was the purpose of this research to provide some clues to answers to these questions during the initial years (K-3) of school attendance. The major hypotheses investigated were:

1. There is no significant difference in achievement between comparable groups of children who attend school during the regular and the greatly extended school year (3 trimesters each year).

2. There is no significant difference in adjustment status between comparable groups of children who attend school during the regular and the greatly extended school year (3 trimesters each year).

METHOD AND PROCEDURE

The Florida State University School (K-12) began operation on a trimester schedule on September 4, 1962. Under this plan, all children were required to attend

two and one-half trimesters resulting in at least 10 more school days each year than formerly, and an option was provided making possible an additional one-half trimester of 35 days. Approximately one-half of the students enrolled elected this option during the first year of trimester operation. This plan provided an excellent opportunity to study the effects of longer school attendance on school achievement and on personal adjustment.

Subjects

It was assumed that many children would elect to attend the lengthened school year for the entire three year period, while others would consistently attend only the required two and one-half trimesters. Of the 165 children in attendance at the close of the study, 38 had attended all three extended school years. In this report this group will be referred to as those attending three summers. Likewise, those attending two or one extended school years will be referred to as those attending two summers and one summer. These numbers were 45 and 44 respectively. Thirty-eight attended only the required school years and will be referred to as those attending no summers. Thus, it can be seen that those attending three summers during the three year period attended nearly 60% of a regular school year longer than those who attended no summers.

Since the Florida State University School did not provide admission priority to certain groups (such as faculty children) and also served county school children, it was assumed that the subjects for this research represented a cross section of the many small urban areas in the United States. As indicated in the introduction, there is some evidence to indicate that there is something different about those who attend an extended school year on a voluntary basis when compared to those who choose not to attend. This "something", whatever it might be, is an obvious limitation of this research. However, the median I.Q. (107.6) of those who did not attend three summers varies only slightly (107.14) from those who did. Tables 1 and 2 indicate the distribution of subjects by attendance and by mean I.Q. in relation to attendance.

Table 1

Attendance of Subjects by Grade and Summers Attended

Grade*	0 Summers	1 Summer	2 Summers	3 Summers	Totals
K	8	9	9	10	36
1	8	16	11	6	41
2	7	10	14	11	42
3	15	9	11	11	46
Totals	38	44	45	38	165

*Grade as of beginning of project

Table 2

Mean I.Q. of Subjects by Attendance Groups

Grade*	0 Summers	1 Summer	2 Summers	3 Summers
K	109.00	111.22	103.44	109.09
1	103.38	108.53	112.00	106.14
2	106.75	106.55	107.92	106.75
3	111.27	110.44	118.18	108.60
Mean	107.60	109.19	110.39	107.65

*Grade as of beginning of project

Experimental Design

During the last two weeks of October and during the last two weeks of school for each group, each year, (as noted in Table 3) all appropriate subjects were evaluated by use of the Haggerty Olson Wickman Behavior Rating Schedules (HOW) and the California Test of Personality (CTP). The latter provides alternate forms, so that no test was repeated oftener than once a year. The HOW scales require that ratings be made by each child's teacher. Thus, it is important that the teacher know every child well. Therefore, initial ratings were not made until about six weeks after the opening of school each year. During the same periods (Table 3) first, second, and third grade achievement was determined by

use of the Metropolitan Achievement Test (MAT) and the Developmental Reading Test (DRT). The MAT and DRT were given somewhat earlier to avoid intensive testing at one time. Alternate forms of these tests were used.

Previous to the last two weeks in October of the first year, the SRA Primary Mental Abilities Test (PMA), Form A was administered to all subjects. This was done in order that, by means of an analysis of covariance technique, the results could be adjusted in terms of variation due to intelligence if necessary.

Table 3

Testing Schedule

Date	Grades	MAT	DRT	PMA	HOW	CTP
Oct., 64	K-3	(1-3)	(1-3)	(all)	(all)	(all)
May, 65	K-3	(1-3)	(1-3)	(all)	(all)	(all)
Oct., 65	1-4	(all)	(all)		(1-3)	(all)
May, 66	1-4	(all)	(all)		(1-3)	(all)
Oct., 66	2-5	(all)	(all)		(2-3)	(all)
May, 67	2-5	(all)	(all)		(2-3)	(all)
Sept., 67	3-6	(all)	(all)			(all)

The following instruments or methods of data collection were used:

Achievement. For the two years prior to the study, the Hammond-Skipper Pre-School Rating Schedule had been under development in other research at the university. While this phase of the research was unnecessary to the total design, the investigator felt the results could be useful and had intended to include them. However, since the scale had never been standardized and did not seem to be yielding useful results, its use was discontinued after the first testing session.

Achievement for grades one through three; two through four; and three through six were assessed by means of the Metropolitan Achievement Test (Primary I, Primary II, Elementary, and Intermediate). These tests comprise a co-

ordinated series of measures of achievement in the content and skill areas of the elementary school curriculum. Areas tested will be found in the analysis of data section of this report.

Reading, since it represents a major concern of the early school curriculum was further examined by use of the Developmental Reading Tests (DRT). The DRT is designed to measure basic vocabulary, general comprehension, and specific comprehension. For longitudinal research, the developmental aspects, by yearly intervals, make the test particularly appropriate.

Adjustment. The widely used HOW Behavior Rating Schedules was utilized (grades K through 3) to obtain indexes of teachers' perceptions concerning the behavior of the children. For the purposes of this research HOW scores will be used as a partial indicator of adjustment status. The instrument consists of two schedules: Schedule A, a behavior problem record which presents a list of fifteen problems to be checked in one of four columns according to the frequency in the individual. Total scores are obtained by assigning weights in terms of seriousness and frequency of the problem. Schedule B consists of a five-point rating scale for the thirty-five traits classified into four groups--emotional, intellectual, physical, and social. A re-rating correlation of .86 and a split-half correlation of .92 are reported for elementary school children on Schedule B. A composite score on A and B has shown a correlation of .76 with frequency of referral for disciplining or other action by the school principal. A comparison of normals with clinic cases has shown that only about 10% of the former equal or exceed the median of the latter.

The SRA Primary Mental Abilities Test (PMA) was used because its score, based on five separate factors, is purported to provide more meaning than a single total intelligence test score. The test was devised by the late L. L. Thurstone and Thelma Gwinn Thurstone.

The California Test of Personality forms AA and BB, 1953 revision, were used in an effort to reveal the status of factors in personality and social adjustment usually designated as intangibles. Sub-scores for Per-

sonal Adjustment and for Social Adjustment were used in this research.

Since the manuals of the tests used provide information on the validity and reliability of the tests, such information is not reported here except for the HOW which is now out of print.

Treatment

Becuase the independent variable under consideration in this research was the length of time children attended during each school year, the experimental groups (those attending three, two, or one extra half trimester) did not receive a formal treatment in the usual sense of experimental research.

For those children who continued an extra 35 (one half trimester) days each year, the program was essentially a continuation of the same activities. The following year children were placed in appropriate groups of similar achievement level. In addition, teachers regrouped within each classroom as needed. Individual students may have been moved to a higher level or grade at any time throughout the year when appropriate achievement status was attained. Thus all subjects received the same treatment except that the length of time attended each year varied.

Treatment of Data

All tests were hand scored since machine scoring is not appropriate for most tests for the grade levels under consideration. Scoring was verified by a second scorer. All results were recorded on standard IBM cards and all computations were performed at the Florida State University computing center using programs as described in the Results and Analysis of Data section of this report.

RESULTS AND ANALYSIS OF DATA

In order to determine whether there were significant differences at the end of the three year period, overall analyses of covariance of five achievement and of three personality variables using a BMD05V, General Linear Hypothesis, version of July 22, 1965, Health Sciences Computing Facility, UCLA Program were made. In this computation only the scores obtained for the final, or seventh testing session were included. Because of the various forms of the same test with changing levels i.e., primary, intermediate, and different scoring systems on different tests, all raw data were transgenerated to standard scores by means of a BMD09S Transgeneration Program for this, and all analyses in this research. The F values for the seventh session analysis are shown in Tables 4 and 5. It will be noted that in

Table 4

F Values for the Metropolitan Achievement Test
For Summers and Grades

Source of Variation	N	df	Word Know.	Read.	Spell.	Arith. Comp.	Arith. P.S.
Grades	139	3	.132	.100	.034	.025	.079
Summers	139	3	3.835*	4.115**	3.418*	2.519	.133
Interact.	139	9	.978	.972	1.174	1.182	.806
Covariate	139	1	63.222**	63.704**	43.181**	44.930**	64.295**

* p .05
** p .01

Table 5

F Values for the California Test of Personality
For Summers and Grades

Source of Variation	N	df	Total	Personal	Social
Grades	139	3	.195	.137	.221
Summers	139	3	.382	.211	.500
Interact.	139	9	1.351	1.284	1.195
Covariate	139	1	2.908	.589	5.756*

* p .05

relation to the independent variable, summers attended, all of the achievement variables, except Arithmetic Problem Solving and Arithmetic Computation are significant at the .05 or .01 levels, (Table 4); and that none of the CAT variables are significant. Reference to Table 6 indicates that none of the variables as measured by the DRT

Table 6

F Values for the Developmental Reading Test
For Summers and Grades

Source of Variation	N	df	Basic Vocab.	Gen. Read. Read. Info.	Spec. Comp. Read. Orgn.
Grade	139	3	.018	.009	.021
Summers	139	3	.235	.173	.249
Interact.	139	9	.880	1.127	1.729
Covariate	139	1	52.838*	45.516*	51.097*

* p .01

seem to be influenced by length of school year as none of the dependent variables are significant. Table 7 indicates

Table 7

F Values for the Metropolitan Achievement Test
For Summers, 6th Grade

Source of Variation	N	df	Lang. Total	Language St. Skills	Science	Soc. St. St. Skills
Summers	40	3	1.731	1.709	1.201	1.556
Covariate	40	1	55.127*	51.934*	30.038*	21.074*
Interact.	40	4	15.780*	14.938*	9.099*	7.355*

* p .001

that Language, Science, and Social Studies variables were not significant in relation to length of attendance. These variables are not measured by the MAT until the sixth grade thus appear for one grade only.

Since the analysis of covariance makes possible an adjustment for equalizing one variable in terms of data collected on another variable, intelligence as measured by the PMA was used throughout for this purpose. This covariate (MAT) was used to adjust all means, thus, in effect holding this source of variation (intelligence) constant throughout the analyses of the outcomes. Tables 8, 9, 10, 11, 12, 13 show the variation presumedly due to length of attendance when means are assumed to be zero.

Table 8

Adjusted Mean Standard Scores for Summer Groups On the Metropolitan Achievement Test - Word Knowledge

Grade*	N	0 Summers	1 Summer	2 Summers	3 Summers
K	37	.610	-.171	-.347	.009
1	37	.139	.096	-.036	-.335
2	37	.759	.028	-.151	-.286
3	45	.070	.153	.188	-.442
Mean		.395	.027	-.087	-.264

* Grade at beginning of study.

Table 9

Adjusted Mean Standard Scores for Summer Groups On the Metropolitan Achievement Test - Reading

Grade*	N	0 Summers	1 Summer	2 Summers	3 Summers
K	37	.098	.131	-.269	.039
1	37	.479	.021	.244	-.747
2	37	.635	.078	-.016	-.366
3	45	.058	.078	.176	-.371
Mean		.318	.082	.034	-.361

* Grade at beginning of study.

Table 10

Adjusted Mean Standard Scores for Summer Groups On the Metropolitan Achievement Test - Spelling

Grade*	N	0 Summers	1 Summer	2 Summers	3 Summers
K	37	.368	-.004	-.413	.071
1	37	.443	.052	.070	-.687
2	37	.462	-.015	.120	-.423
3	45	-.102	.238	.286	-.378
Mean		.293	.068	.016	-.354

* Grade at beginning of study.

A consistent pattern emerges for Word Knowledge (Table 8); Reading (Table 9); and Spelling (Table 10). In every case children, as a group, attending three summers achieved less well than those attending two summers; those attending two summers less well than those attending one; and those who did not attend any summers achieved significantly better than any other group.

While the pattern for Math, Science, Language, and Social Studies (Tables 11, 12, 13) is not consistent, in every case it must be concluded that children attending three summers, with one exception, did less well than those not attending any of the summer sessions during the three year period. The exception was that children in the kindergarten and first grade at the beginning of the study did

Table 11

Adjusted Mean Standard Scores for Summer Groups On the Metropolitan Achievement Test - Arithmetic Comprehension

Grade*	N	0 Summers	1 Summer	2 Summers	3 Summers
K	37	.238	.034	-.304	.049
1	37	.020	.073	.629	-.809
2	37	.062	-.278	.138	-.134
3	45	.187	.073	.107	-.465
Mean		.127	-.098	.143	-.339

* Grade at beginning of study.

somewhat better at the close of the study in Arithmetic Problem Solving when they attended three summers as compared to no summers (Table 12).

Table 12

Adjusted Mean Standard Scores for Summer Groups on the Metropolitan Achievement Test - Arithmetic Problem Solving

		Summers			
Grade*	N	0	1	2	3
K	37	-.093	.016	-.176	.199
1	37	.087	-.162	.383	.070
2.	37	.118	-.208	-.179	.086
3	45	.129	.074	.158	-.435
Mean		.017	-.070	.047	-.020

* Grade at beginning of study.

Table 13

Adjusted Mean Standard Scores for the 3rd Grade* On Four Variables of the Metropolitan Achievement Test

	Summers			
Variable	0	1	2	3
Language Total	.072	.247	.040	-.392
Language Study Skills	.142	.174	.039	-.416
Science	.085	.114	.160	-.405
Social Studies Study Skills	.153	.163	.365	-.322

* Grade at beginning of study.

While the F values for the DRT results were not significant, the adjusted mean scores for the DRT (Tables 14, 15, 16) show the same trend. That is, for the group as a whole at the close of the study, those who attended no summers did better than those attending three summers.

Table 14

Adjusted Mean Standard Scores for Summer Groups On the Developmental Reading Test - Basic Vocabulary

		Summers			
Grade*	N	0	1	2	3
K	37	.293	.084	-.497	.130
1	37	-.382	.091	.168	.072
2	37	.080	-.089	-.068	-.099
3	45	.083	.051	.035	-.357
Mean		.019	.034	-.092	-.064

*Grade at beginning of study.

Table 15

Adjusted Mean Standard Scores for Summer Groups on the Developmental Reading Test: General Reading - Reading for Information

		Summers			
Grade*	N	0	1	2	3
K	37	.144	.125	-.476	.187
1	37	-.370	.165	-.020	.078
2	37	.208	-.257	.020	-.009
3	45	.102	.158	.205	-.520
Mean		.021	.048	-.068	-.066

* Grade at beginning of study.

Table 16

Adjusted Mean Standard Scores for Summer Groups on the Developmental Reading Test: Specific Comprehension - Reading to Organize

		Summers			
Grade*	N	0	1	2	3
K	37	.230	.127	-.549	.183
1	37	-.210	.060	-.115	.230
2	37	.164	-.590	.131	.051
3	45	.104	-.070	.404	-.543
Mean		.072	-.118	-.032	-.020

* Grade at beginning of study.

Adjustment

As indicated earlier, none of the F values for the California Test of Personality were significant. However, the adjusted mean scores with intelligence held constant reveal an interesting trend (Table 17). The adjusted

Table 17

Adjusted Mean Standard Scores for Summer Groups on the California Test of Personality - Social

		Summers			
Grade*	N	0	1	2	3
K	37	.100	.352	.088	.143
1	37	.514	-.298	-.209	.264
2	37	-.837	.326	.014	-.014
3	45	.111	-.412	.357	-.189
Mean		-.028	-.184	.063	.051

* Grade at beginning of study.

means of the groups would indicate that Social Development improves with additional school attendance each year, with attendance two of three summers producing the best results. However, an examination of the results by grade level suggests that the group means are a function of chance, since there is no consistent trend for any grade.

The HOW Behavior Rating Scales, used to determine adjustment, are essentially an indication of the teachers' perceptions of childrens' desirable and undesirable behavior. The F values for Schedules A and B in Tables 18 and 19 are significant for summers in the kindergarten and first grade only.

Table 18

F Values for the HOW Schedule A Scores for Summers and Sessions

Source of Variation	Grades** K		1		2		3	
	df	(N=36)	df	(N=41)	df	(N=42)	df	(N=46)
Summers	3	2.408*	3	1.459	3	2.479*	3	.490
Sessions	6	.016	5	.061	3	.007	1	.000
Interact.	18	.556	15	.336	9	.356	3	.395

* $p < .05$

** Grade at beginning of study.

Table 19

F Values for the HOW Schedule B Scores for Summers and Sessions

Source of Variation	Grades *** K		1		2		3	
	df	(N=36)	df	(N=41)	df	(N=42)	df	(N=46)
Summers	3	2.964*	3	4.005**	3	1.606	3	2.184
Sessions	6	.046	5	.086	3	.006	1	.007
Interact.	18	.592	15	.310	9	.125	3	.202

* $p > .05$
** $p > .01$
*** Grade at beginning of study.

Schedule A consists of 15 behavior problems ranging from Minor problems such as disinterest to more serious matters such as stealing. Schedule B is a rating of 35 physical, mental, social, and emotional characteristics. High scores represent high problem tendencies predicting poor ability to adjust. Tables 20 and 21 give the mean standard scores by testing sessions for children in the kindergarten at the beginning of the study. Odd numbered sessions represent adjustment ratings in the early fall and even numbered sessions ratings in the late spring of each year. It is interesting to note that children who attended no summer sessions always had better ratings on Schedule B (Table 21) in the spring while those who

Table 20

Mean Standard Scores for Summer Groups on the HOW, Schedule A - Kindergarten*

Testing Session	Summers 0	1	2	3
1	.078	-.180	.151	-.039
2	-.268	-.043	.139	.125
3	-.305	.238	.288	-.304
4	-.398	.179	.111	-.086
5	-.159	.611	.013	-.405
6	-.153	.457	.081	-.440
Mean	-.201	.210	.131	-.192

* Grade at beginning of study.

Table 21

Mean Standard Scores for Summer Groups on the HOW, Schedule B - Kindergarten*

Testing Session	Summers 0	1	2	3
1	.226	-.308	.222	-.104
2	-.461	-.067	.534	-.052
3	-.214	.014	.184	-.257
4	-.649	.244	.230	-.080
5	-.203	.431	.091	-.334
6	-.296	.201	.274	-.157
Mean	-.266	.086	.256	-.164

* Grade at beginning of study.

attended all three summers always had better ratings in the fall than in the spring. Those who attended no summers had a better mean rating than those who attended three summers and those attending one or two summers consistently had poorer mean ratings. Except in one instance, these two groups always had better adjustment status in the fall than in the spring. While there is no clear cut pattern for Schedule A, problem tendencies (Table 20), children who regularly did or did not attend summer sessions had fewer adjustment problems than those attending one or two summers.

As can be seen from the mean scores in Tables 22 and 23, first grade children at the beginning of the research attending three summers were better adjusted than those

Table 22

Mean Standard Scores for Summer Groups on the HOW, Schedule A - First Grade*

Testing Session	Summers 0	1	2	3
1	.040	-.021	-.111	.137
2	.136	-.024	.046	.360
3	.169	.096	-.167	-.173
4	.289	-.131	.113	-.250
5	.680	-.283	-.082	.003
6	.209	-.197	.134	-.030
Mean	.254	-.094	-.067	.047

* Grade at beginning of study.

Table 23

Mean Standard Scores for Summer Groups on the HOW, Schedule B - First Grade*

Testing Session	Summers 0	1	2	3
1	-.114	-.104	.235	-.293
2	.001	-.113	.343	-.133
3	.146	-.069	.160	-.307
4	.584	-.291	.138	-.258
5	.345	-.313	.290	-.157
6	.426	-.407	.247	-.010
Mean	.232	-.216	.236	-.193

* Grade at beginning of study.

attending the extended school year (no summers) each year. Unlike the kindergarten children they always had fewer problem tendencies in the fall than in the spring. The kindergarten children attending no summers were better adjusted than those attending three summers, while just the opposite was true for first grade children.

Because the HOW is only suitable for K-3 children, those who at the beginning were in grades two and three actually had the effect of one and no summers attendance. However, the results for these groups are reported since virtually all of them fell in the same attendance patterns the two years prior to the beginning of the study. Tables 24, 25, 26, 27 support the contention that children who attend year round programs (3 summers) possess more problem tendencies than those who do not attend summer or extended school year sessions.

Table 24

Mean Standard Scores for Summer Groups on the HOW, Schedule A - Second Grade*

Testing Session	Summers 0	1	2	3
1	-.331	-.145	.214	.073
2	-.400	-.083	.022	.305
3	-.221	-.025	-.054	.222
4	-.321	-.026	-.194	.639
Mean	-.318	-.070	-.012	.310

* Grade at beginning of study.

Table 25

Mean Standard Scores for Summer Groups on the HOW, Schedule b - Second Grade*

Testing Session	Summers 0	1	2	3
1	-.189	-.095	-.059	.284
2	-.060	-.127	-.019	.177
3	-.223	-.267	.159	.185
4	-.096	-.281	-.067	.401
Mean	-.142	-.192	.014	.262

*Grade at beginning of study.

Table 26

Mean Standard Scores for Summer Groups on the HOW, Schedule A - Third Grade*

Testing Session	Summers 0	1	2	3
1	-.072	.060	.204	.246
2	-.172	-.177	.197	.185
Mean	-.122	-.059	.201	.216

* Grade at beginning of study.

Table 27

Mean Standard Scores for Summer Groups on the HOW, Schedule B - Third Grade*

Testing Session	Summers 0	1	2	3
1	.025	.351	-.212	-.112
2	-.030	.608	-.423	-.034
Mean	-.002	.479	-.318	-.073

*Grade at beginning of study.

CONCLUSIONS AND DISCUSSION

The results reported above, while inadequate to justify definitive conclusions, present evidence to indicate that:

1. The null hypotheses that there is no significant difference in achievement between comparable groups of K-3 children who attend school during the regular and the greatly extended school year of three trimesters must be partially rejected. It would appear that comparable children in kindergarten through third grade do not achieve as well in Word Knowledge, Reading, and Spelling during a three year period when they attend an extended school year for a three year period as children who only attend the regular period of 190 days each year.

While Arithmetic Comprehension, Arithmetic Problem Solving, Language Total, Language Study Skills, Science, and Social Studies Study Skills scores did not reach statistical significance, an examination of the adjusted mean standard scores with intelligence held constant supports the same conclusion in these subject areas. The results of the Developmental Reading Tests for Basic Vocabulary, General Reading-Reading for Information, and Reading to Organize did not reach statistical significance, but again the adjusted mean standard scores with intelligence held constant support the same conclusion.

While data are available to make a detailed trend analysis by grades, testing sessions, and summers attended, difficulties beyond the control of the investigator in computer programming to handle the complex longitudinal data involved prevented completion within the time limitations and financial support of this project. This valuable information with its important implications for developing sound programs of instruction for young children will be available and reported later.

2. The null hypothese that there is no significant difference in adjustment status between comparable groups of K-3 children who attend school during the regular and the greatly extended school year of three trimesters must be partially rejected. Throughout the three year period as indicated by the adjusted mean standard scores, children in the Kindergarten at the beginning of the study had

more problems as perceived by their teachers if they attended summer school than if they attended the regular school year only. However, the analyses by testing session does not show a consistent trend. This could be due to the fact that different teachers view the seriousness of childrens' behavior differently. Children who did or did not attend summer sessions had fewer adjustment problems than those attending one or two summers.

Children in the first grade at the beginning of the study had fewer adjustment problems if they attended all three summer sessions than if they attended none. Children in the second and third grades at the beginning of the study tended to have more behavior problems if they attended the extra summer sessions each year.

While the findings are somewhat confusing it can be concluded that young children attending year round school tend to have more behavior problems as perceived by teachers than their peers who attend only the regular school year. Perhaps this is a function of the effect of year round programs on teachers as they tend to perceive the same children as having more problems in the spring than in the fall.

Data are available for an intensive longitudinal trend analysis by attendance groups and by sub tests of the many measures used. In addition, a determination of the reason each child did or did not attend the extended school year sessions would add valuable information. For example, if attending extra sessions is a result of parental pressures rather than pupil choice, the results might be quite different. This investigator intends to extend this research to include the above and report the results at some future date.

Whether or not the usual school year should be extended is an important problem. The evidence of this research tends to bear out the opinions expressed in the literature that, at least for young children, the extended school year does not produce adequate improvement in achievement and adjustment status to justify the added expenditure and effort. In fact, many negative effects were found indicating that there may be an optimum time period of instruction beyond which undesirable effects result. These observations are provocative enough to indicate the need for more extensive, carefully designed research in this area.

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RETRIEVAL TERMS

600 Year round operation
601 Trimester Operation
602 Achievement and Length of School Year
603 Adjustment and Length of School Year
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IDENTIFIERS

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ABSTRACT

800 In order to determine the effect of an extended school year on achievement
801 and adjustment, 165 K-3 children at the Florida State University School were
802 administered the Metropolitan Achievement Test, the Developmental Reading Test,
803 the California Test of Personality and the Haggerty-Olson-Wickman Behavior Rating
804 Schedules each October and May over a three year period. All children were also
805 administered the Primary Mental Abilities Test at the beginning of the study.
806 Since attending an extra half-trimester each year was voluntary, four groups were
807 involved; those attending all three extended school years, two extended years,
808 one extended year, and regular school years only. Analyses were made in relation
809 to length of school year attended using an analysis of covariance technique with
810 intelligence held constant.

811 While inconclusive, the evidence indicates that length of school year does
812 effect the achievement and adjustment of young children, kindergarten through
813 third grade. When intelligence is held constant children of these ages tend to
814 achieve less well, and possess more adjustment problems as perceived by their
815 teachers, when they attend an extended school year for three years than comparable
816 children who attend only the regular school year during the same period. Further
817 trend analyses are needed.
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